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Barbara Haggerty

Name

*Barbara Haggerty*  
Signature



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application Of: Gan et al.

For: Double Current Collector Negative Electrode  
Design For Alkali Metal Ion Electrochemical Cells

the specification of which is being transmitted herewith.

Assistant Commissioner of Patents  
Washington, D.C. 20231

**INFORMATION DISCLOSURE STATEMENT  
Pursuant to 37 CFR 1.56**

1. Applicants submit herewith patents, publications or other information of which they are aware, which they believe may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR 1.56.

The filing of this Information Disclosure Statement (IDS) shall not be construed as a representation that a search has been made (37 CFR 1.56(g)), an admission that the information cited is, or is considered to be material to patentability or that no other material information exists.

IDS For: Double Current Collector Negative Electrode  
Design For Alkali Metal Ion Electrochemical  
cells

Inventor: Gan et al.

The filing of this IDS shall not be construed as an admission against interest in any manner (Notice of Jan. 9, 1992, 1135 O.G. 13-25, at 25).

2. Attached is Form PTO-1449. Legible copies of all items listed accompany this IDS.

3. A concise explanation of the possible relevance of the listed information items is as follows:

Patents:

U.S. Patent No. 5,744,258 to Bai et al. is directed to a high power, high energy hybrid electrode comprising a high-rate material 44 and a high energy material 42. The materials are arranged in a variety of ways including being co-deposited on the current collector either in superimposed layers, adjacent layers, or intermixed with each other, or as one material coating particles of the other material to form a mixture deposited on the current collector. Several arrangements are shown in Figs. 2 to 5 including having the high-energy material being directly deposited on the current collector and then the high-rate material being deposited on the high-energy material (Fig.4).

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U.S. Patent No. 5,582,935 to Dasgupta et al. relates to a composite electrode for a lithium battery comprising a metal current collector sheet having a surface comprising a double layer of a mixed oxide interface containing an oxide of the metal of the current collector and a transition metal oxide, and a layer of the same transition metal oxide over the mixed metal interface layer. The double layer is in contact with a positive electrode containing an oxide of the same transition metal as the cathode active material. A SVO material may be the cathode active material.

U.S. Patent No. 5,667,916 to Ebel et al. discloses a mixed cathode formulation comprising both SVO and  $CF_x$ .

U.S. Patent No. 5,716,422 to Muffoletto et al. provides an electrode component, particularly an SVO cathode, wherein the cathode component is made by thermal spray depositing a cathode active material onto a suitable structure. As noted at column 6, lines 8 to 14, the cathode material may be a mixture of metal oxides and elemental metal combinations.

4. The remaining patents listed on Form PTO-1449 are referenced in the specification or are considered to be examples of the state of the art.

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5. The person making this statement is the agent who signs below, who makes this statement on the information supplied by the inventors and the information in the agent's file.

Respectfully Submitted,

By:   
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